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EXAMINER	
CURS, NATHAN M	
ART UNIT	PAPER NUMBER
2636	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 09/783,002	Applicant(s) GRAVES ET AL.	
	Examiner NATHAN CURS	Art Unit 2636	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2007*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-3 and 10-21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-3 and 10-21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some * c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Interim copies:

a)☐ All b)☐ Some c)☐ None of the: Interim copies of the priority documents have been received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

4) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 11, 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tshushima et al. (US Patent No. 6424445) in view of Eggleton et al. (US Patent No. 6370300), and further in view of Fukashiro et al. (US Patent No. 6362905).

Regarding claims 1 and 20, Tsushima et al. disclose a photonic network node (fig. 16 and col. 14 lines 12-34) comprising: demultiplexer means for demultiplexing an optical signal into channels (fig. 16, elements 201); photonic switch fabric for forwarding an optical signal comprising a plurality of channels (fig. 16, element 123, where the WDM input is effectively forwarded by the switch fabric); and multiplexer means for multiplexing a plurality of channels into an output optical signal (fig. 16, elements 202). Tsushima et al. do not disclose bulk compensator means for reducing a variance between inputs to the photonic network node by applying dynamically adjusted bulk compensation to all channels of the optical signal, thereby producing a compensated optical signal. Eggleton et al. disclose a photonic network node comprising: bulk

compensator means for reducing a variance between inputs of an optical signal received at a photonic node by applying dynamically adjustable bulk compensation to all channels of the multiplexed signal, thereby producing a compensated optical signal (fig. 2 and col. 4, lines 14-43 and col. 4, line 65 to col. 5, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to use adjustable bulk compensation at the multiplexed input signal entering the node of Tsushima et al, in order to variably compensate for wavelength dispersion accumulated upstream in the network due to non-linear effects and environmental changes in the network, as taught by Eggleton et al. (col. 2, lines 41-54).

Also, the combination does not disclose means for monitoring before and after the photonic switch fabric. Fukashiro et al. disclose a photonic node comprising means for performance monitoring on each one of a plurality of channels of the optical signal before and after a cross-connect in conjunction with protected switching fabrics (fig. 11, elements 24, 10-1 and 10-2 and col. 13, line 36 to col. 14 line 10). It would have been obvious to one skilled in the art at the time of the invention to use performance monitoring on each of the channel inputs and outputs of the optical switch of Tshusima et al., as well as redundant switch fabric functionality based on Fukashiro et al., to provide the ability to monitor individual signal performance and/or failure for the individual signal channels, as well as to compensate for a switch fabric failure, as taught by Fukashiro et al.

Also, the combination as describe above does not disclose optical compensation means for performing dynamically adjustable amplitude impairment compensation on

each one of the plurality of channels of the optical signal, responsive to monitoring of each channel and based at least in part on output carrier power. However, in another embodiment, Fukashiro et al. disclose an optical switch fabric where amplifiers are provided in conjunction with switching, to provide the option of monitoring-based amplifying of a switched signal(s) before outputting the switched signal(s) from the optical switch (fig. 1 and col. 5, lines 25-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to use monitoring-controlled amplifiers like that of Fukashiro et al. in conjunction with the optical switch and signal monitors of the combination, in order to provide the benefit of refreshing or boosting the amplitude of signals before they are output from the optical switch, in response to monitoring the signals.

Regarding claim 2, the combination of Tsushima et al., Eggleton et al. and Fukashiro et al. discloses that the photonic switch fabric includes a plurality of optical switch planes, including switching groups of wavelengths (Fukashiro et al.: fig. 11 elements 10-1 and 10-2, as applicable for the combination described above).

Regarding claim 11, the combination of Tsushima et al., Eggleton et al. and Fukashiro et al. disclose means for monitoring including channel performance monitors (Fukashiro et al.: fig. 11, elements 24 and col. 13, lines 36-50, as applicable for the combination described above).

Regarding claim 12, the combination of Tsushima et al., Eggleton et al. and Fukashiro et al. disclose mean for protecting channels of the optical signal responsive to

the monitoring means (Fukashiro et al.: fig. 11 elements 10-1 and 10-2, as applicable for the combination described above).

3. Claims 3 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tshushima et al. (US Patent No. 6424445) in view of Eggleton et al. (US Patent No. 6370300), and further in view of Fukashiro et al. (US Patent No. 6362905), as applied to claims 1 and 20 above, and further in view of Patterson et al. (US Patent No. 6356684).

Regarding claims 3 and 21, the combination of Tsushima et al., Eggleton et al. and Fukashiro et al. disclose the node as claimed in claims 1 and 20, respectively, but do not disclose additional means for dynamically adjustably compensating for individual channel chromatic dispersion impairment. Patterson et al. disclose individual channel, dynamically adjustable, dispersion compensators in a WDM node that are controlled based on a tapped channel power feedback signal (figs. 13 and 16 and col. 9, lines 48-65, col. 10, lines 5-21 and col. 11, lines 14-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to add individual channel variable compensators to each demultiplexed channel of the combination in conjunction with the monitoring, in order to provide the benefit of supplemental compensating for any individual wavelength dispersion that may need compensation adjustment based on performance monitoring information for that individual channel.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsushima et al. (US Patent No. 6424445) in view of Eggleton et al. (US Patent No.

6370300), and further in view of Fukashiro et al. (US Patent No. 6362905), as applied to claim 1 above, and further in view of Arecco et al. (US Patent No. 6973267).

Regarding claim 10, the combination of Tsushima et al., Eggleton et al., and Fukashiro et al. does not disclose that the means for monitoring includes wrapper readers. Arecco et al. disclose an optical channel overhead, used as a communication channel for performance monitoring, the overhead inherent read by a processor to achieve the performance monitoring (col. 11 lines 49-55). It would have been obvious to one skilled in the art at the time of the invention to use optical channel overheads in the system of the combination, for communicating performance monitoring information in the network.

5. Claims 13, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukashiro et al. (US Patent No. 6362905) in view of Eggleton et al. (US Patent No. 6370300).

Regarding claim 13, Fukashiro et al. disclose a multi-channel photonic node comprising means for performance monitoring on each one of a plurality of channels of the optical signal (fig. 11 and col. 13, lines 36-50) and means for protecting channels responsive to the monitoring means (fig. 4 and col. 7, lines 4-41; and fig. 11 and col. 13, line 51 to col. 14, line 10) and WDM compatibility (col. 8, lines 46-52), but do not disclose means for reducing a variance between inputs to the photonic network node by applying dynamically adjusted bulk compensation to all channels of the optical signal. Eggleton et al. disclose a multi-channel photonic network node comprising: means for

reducing a variance between inputs of an optical signal received at a photonic node by applying bulk compensation to all channels of the optical signal before demultiplexing an optical signal into a plurality of channels (fig. 2 and col. 4, lines 14-43 and col. 4, line 65 to col. 5, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to use adjustable bulk compensation at the multiplexed input signal entering the node of Fukashiro et al., in order to variably compensate for wavelength dispersion accumulated in the network due to non-linear effects and environmental changes in the network, as taught by Eggleton et al. (col. 2, lines 41-54).

Also, the combination as described above does not disclose means for performing dynamically adjustable amplitude impairment compensation on each one of the plurality of channels of the optical signal, responsive to monitoring of each channel and based at least in part on output carrier power. However, in another embodiment, Fukashiro et al. disclose an optical switch fabric where amplifiers are provided in conjunction with switching, to provide the option of monitoring-based amplifying of a switched signal(s) before outputting the switched signal(s) from the optical switch (fig. 1 and col. 5, lines 25-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to use monitoring-controlled amplifiers like that of Fukashiro et al. in conjunction with the optical switch and signal monitors of the combination, in order to provide the benefit of refreshing or boosting the amplitude of signals before they are output from the optical switch in response to monitoring the signals.

Regarding claim 16, the combination of Fukashiro et al. and Eggleton et al. disclose that the means for monitoring include means for detecting and isolating

photonic node specific faults and mis-connects, and means for triggering protection switching to redundant modules when appropriate (Fukashiro et al.: col. 7, lines 4-41; and col. 13, line 51 to col. 14, line 10).

Regarding claim 17, the combination of Fukashiro et al. and Eggleton et al. disclose that the means for monitoring includes photonic node output channel power level compensation responsive thereto (Fukashiro et al.: fig. 1 and col. 5, lines 25-50, as applicable for the combination as described above, where the monitoring includes the monitoring-based amplifying).

6. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukashiro et al. (US Patent No. 6362905) in view of Eggleton et al. (US Patent No. 6370300), as applied to claim 13 above, and further in view of Tsushima et al. (US Patent No. 6424445).

Regarding claim 14 and 15, the combination of Fukashiro et al. and Eggleton et al. discloses monitoring in the optical cross-connect used to control protection switching (Fukashiro et al.: col. 7, lines 4-41; and col. 13, line 51 to col. 14, line 10), but do not disclose a supervisory channel used for communicating between nodes and for controlling the optical cross-connects for network wide protection and restortion. Tsushima et al. disclose an optical node where a supervisory channel is used for communicating between nodes and for controlling the optical cross-connects (Tsushima et al.: abstract and col. 1, lines 14-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a supervisory channel, as disclosed by

Tsushima et al., between multiple nodes of the combination to communicate monitoring and control information between nodes for network wide performance and fault management, and the triggering of network wide protection and restoration.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukashiro et al. (US Patent No. 6362905) in view of Eggleton et al. (US Patent No. 6370300), as applied to claim 13 above, and further in view of Patterson et al. (US Patent No. 6356684).

Regarding claim 18, the combination of Fukashiro et al. and Eggleton et al. do not disclose that the means for monitoring includes photonic node output channel dispersion compensation responsive thereto. Patterson et al. disclose individual channel, dynamically adjustable, dispersion compensators that are controlled based on a tapped channel power feedback signal (figs. 13 and 16 and col. 9, lines 48-65, col. 10, lines 5-21 and col. 11, lines 14-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to use individual channel variable compensators for each channel in conjunction with the monitoring of Fukashiro et al., in order to provide the benefit of compensating for any individual wavelength dispersion that may need compensation adjustment based on performance monitoring information for that individual channel.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukashiro et al. (US Patent No. 6362905) in view of Eggleton et al. (US Patent No.

6370300), as applied to claim 13 above, and further in view of Chaudhuri et al. (US Patent No. 6587235).

Regarding claim 19, the combination of Fukashiro et al. and Eggleton et al. discloses a node with an optical cross-connect, but do not disclose means for interfacing with electrical signaling network nodes. Chaudhuri et al. disclose a node with an optical cross-connect, including interfaces with electrical signals using electrical-to-optical conversion (fig. 5; col. 5, lines 22-36). It would have been obvious to one skilled in the art at the time of the invention to use electrical-to-optical conversion interfaces in the node of the combination in order to interface with electrical signals in addition to optical signals for providing broader interface options.

Response to Arguments

9. Applicant's arguments filed 20 December 2007 have been fully considered but they are not persuasive.

Applicant argues that a *prima facie* case of obviousness requires an explicit suggestion, teaching or motivation in the references. However, in light of KSR International Co. v. Teleflex Inc. (KSR), 82 USPQ2d 1385 (2007), an express teaching, suggestion or motivation to combine/modify in the prior art is one possible basis, but not the only possible basis, for establishing obviousness. Applicant is directed MPEP § 2141.III, which explains rationales to support rejections under 35 USC § 103, and states: “The prior art reference (or references when combined) *need not teach or suggest all the claim limitations*, however, Office personnel must explain why the

difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art." [emphasis added]. In the rejections above under 35 USC § 103, where the limitations are not explicitly taught in the references, a rationale is provided for why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art.

Applicant also argues that there would not be a reasonable expectation of success for the combination(s). However, this argument is apparently based only on a lack of an explicit teaching/suggestion of such expectations of success. This argument is not persuasive because the reasoning of the rationales of the obviousness rejections establishes reasonable expectation of success and no additional explicit teaching or suggestion of such success is required.

Applicant also seems to argue that the "all-optical gateway" problem addressed by the claimed invention was not recognized as being a problem in the industry, arguing that OEO nodes were the type "generally accepted." However, at least Tsushima and Fukashiro already expressly teach all-optical switching. Further, portions of the references are cited for respective claim limitations and there they "recognized the problem" of the corresponding claimed subject matter. If Applicant is implying that a single reference must teach all the limitations, that is a test for anticipation (35 USC § 102), not obviousness (35 USC § 103).

Applicant also argues that Fukashiro fig. 1 teaches amplitude compensation between stages of switching fabric. However, the relevant teaching is the monitor-controlled channel amplifiers in conjunction with an optical switching node. The whole

physical architecture of Fukashiro fig. 1 is not relied on, nor need it be. The test for obviousness is not whether the features of a secondary reference/embodiment may be bodily incorporated into the structure of the primary reference/embodiment; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Applicant also argues that the amplifiers of Fukashiro fig. 1 are used for matching output amplitude rather than compensating for insertion loss. However, Fukashiro does not state this. To the contrary, Fukashiro refers to the amplifiers as repeaters, in the context of compensating for insertion loss (col. 2 lines 29-31, col. 8 lines 53-54 and claims 6 and 7, among others, in light of col. 2 lines 5-12). In any case, regarding the particular arrangement of the monitor-controlled amplifiers of Fukashiro fig. 1, the relevant teaching for the combination is the monitor-controlled channel amplifiers in conjunction with an optical switching node. One of ordinary skill in the art would recognize the concept of a monitor-controlled amplifier without being tied down to the particular structure of Fukashiro fig. 1. Further, output monitoring is already provided by way of the Fukashiro fig. 11 embodiment, and the teaching taken from fig. 1 need not duplicate that of fig. 11.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN CURS whose telephone number is (571)272-3028. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHAN M CURS/

Primary Examiner, Art Unit 2636